3. Density Analogue Method

The density analogue method can only be used on arrays of identical units. In most critical experiments checked, the method produced conservative results.

Nonconservative results were obtained from the long, close packed bottle arrays. Therefore, this method should be used only on stacked arrays of long slender containers or where the spacing between units in a planar array is greater than two container diameters.

In the plutonium ingot arrays density analogue yielded very close results both when the cylindrical ingots were corrected by geometric buckling conversion or uncorrected; i.e., using the cylindrical volume and mass. Use of the shape allowance factor, page II.B.4-1, yielded nonconservative results on both plutonium and uranium metal calculations and should not be used with density analogue.

In the uranium metal and solution arrays, both the buckling conversion method and calculations using uncorrected cylindrical mass and volume gave quite conservative but safe results. Using the buckling conversion yielded results that were in slightly better agreement with experiment.